

BOLT KEEPER TOILET FLANGE

BACKGROUND OF THE INVENTION

This invention relates to toilet-bowl bolt flanges having bolt keepers to set, retain and lock toilet-bowl bolts when being installed or repaired.

5 Generally, toilet bowls are bolted to cement or wooden floors with toilet bolts that point up from a toroidal toilet-bolt flange that is bolted down to the floor with floor bolts that point down at separate circumferential portions of the toilet-bowl flange.

10 Positioning the toilet bolts that point up, preventing them from falling through floor openings and preventing them from rotating for opposition to rotation of fastener nuts screwed onto them are problems that have not been solved previously for original installation and more yet for repair of old toilet bowls. Overcoming these problems are objectives of this invention.

15 Examples of most-closely related known but different devices are described in the following patent documents:

<u>U.S. Patent No.</u>	<u>Inventor</u>	<u>Issue Date</u>
5,890,239	Hite	04/06/1999
3,921,229	Yavitch	11/25/1975
3,409,918	Gaddy	11/12/1968
20 919,935	Oidtmann	04/27/1909
3,579,670	Frank	05/25/1971
879,176	Jackson	02/18/1908
812,543	Buchanan, Jr.	02/13/1906
1,005,751	Schweitzer	10/10/1911
25 1,061,632	Podolsky	05/13/1913
4,207,630	Bressler	06/17/1980

SUMMARY OF THE INVENTION

Objects of patentable novelty and utility taught by this invention are to provide a bolt-keeper toilet flange which:

can be used in original toilet installation to prevent toilet bolts
5 from slipping out of place or falling through floor openings;

can be used as a supplemental flange on top of current flanges for
toilet repairs; and

can be positioned circumferentially on top of present flanges.

10 This invention accomplishes these objectives with a bolt-keeper toilet flange having a predeterminedly arcuate plate with one or more bolt-head brackets for holding a head of a toilet bolt in order to position the toilet bolt upright in a predetermined place for attachment of a toilet bowl. On opposite sides of the bolt-head bracket are arcuate floor-bolt apertures through which floor bolts can be inserted with heads of the floor bolts being retained by the floor-bolt apertures for
15 bolting the arcuate panel to a floor selectively about a toilet drain aperture. Optionally, for a repair embodiment, the arcuate plate can extend predetermined degrees for bridging between sections of an existing toilet-bowl ring. For original installation, the arcuate plate can be two halves or one complete toroidal flange.

20 The above and other objects, features and advantages of the present invention should become even more readily apparent to those skilled in the art upon a reading of the following detailed description in conjunction with the drawings wherein there is shown and described illustrative embodiments of the invention.

BRIEF DESCRIPTION OF DRAWINGS

This invention is described by appended claims in relation to description of a preferred embodiment with reference to the following drawings which are explained briefly as follows:

FIG. 1 is a top view of an arcuate-plate embodiment having a supplemental bolt-head bracket;

FIG. 2 is a partially cutaway front view of the **FIG. 1** illustration;

FIG. 3 is a bottom view of the **FIG. 1** illustration;

FIG. 4 is a front view of the **FIG. 1** illustration with floor bolts and a toilet bolt in place for repair use to attach a toilet bowl to a floor;

FIG. 5 is a top view of an arcuate-plate embodiment having an integral bolt-head bracket;

FIG. 6 is a partially cutaway front view of the **FIG. 5** illustration;

FIG. 7 is a bottom view of the **FIG. 5** illustration;

FIG. 8 is a front view of the **FIG. 5** illustration with floor bolts and a toilet bolt in place for repair use to attach a toilet bowl to a floor;

FIG. 9 is a top view of a connector plate having a supplemental bolt-head bracket with an entry at an outside edge and a width of approximately three-quarters of an inch with circular floor-bolt apertures;

FIG. 10 is a top view of a connector plate having a supplemental bolt-head bracket with an entry at an inside edge and a width of approximately one inch with circular floor-bolt apertures;

FIG. 11 is a top view of a connector plate having a supplemental bolt-head bracket with an entry at an outside edge and a width of approximately one inch with arcuate floor-bolt apertures;

FIG. 12 is a top view of a connector plate having an integral bolt-head bracket with an entry at an outside edge and a width of approximately one inch with arcuate floor-bolt apertures;

FIG. 13 is a top view of a supplemental circumferential plate having a first supplemental bolt-head bracket with an entry at an inside edge, a second supplemental bolt-head bracket with an entry at an outside edge and a width of approximately one-and-one-half inches with circular floor-bolt apertures; and

FIG. 14 is a top view of a base circumferential plate having a first integral bolt-head bracket with an entry at an inside edge, a second integral bolt-head bracket with an entry at an outside edge and a width of approximately one-and-one-half inches with circular floor-bolt apertures.

DESCRIPTION OF PREFERRED EMBODIMENT

Listed numerically below with reference to the drawings are terms used to describe features of this invention. These terms and numbers assigned to them designate the same features throughout this description:

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|-----------------------------------|--|
| 1. Arcuate plate | 12. Supplemental circumferential plate |
| 2. Supplemental bolt-head bracket | 13. Base circumferential plate |
| 3. Bracket walls | 14. Toilet- bolt shank |
| 4. Bolt-head side | 15. Toilet-bolt head |
| 5. First arcuate end | 16. Toilet-bolt nut |
| 6. Second arcuate end | 17. Bracket entry |
| 7. Arcuate floor-bolt apertures | 18. Inside edge |
| 8. Floor bolts | 19. Outside edge |
| 9. Integral bolt-head bracket | 20. End wall |
| 10. Bolt-shank opening | 21. Floor-bolt apertures |
| 11. Connector plate | |

10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100 105 110 115 120 125 130 135 140 145 150 155 160 165 170 175 180 185 190 195 200 205 210 215 220 225 230 235 240 245 250 255 260 265 270 275 280 285 290 295 300 305 310 315 320 325 330 335 340 345 350 355 360 365 370 375 380 385 390 395 400 405 410 415 420 425 430 435 440 445 450 455 460 465 470 475 480 485 490 495 500 505 510 515 520 525 530 535 540 545 550 555 560 565 570 575 580 585 590 595 600 605 610 615 620 625 630 635 640 645 650 655 660 665 670 675 680 685 690 695 700 705 710 715 720 725 730 735 740 745 750 755 760 765 770 775 780 785 790 795 800 805 810 815 820 825 830 835 840 845 850 855 860 865 870 875 880 885 890 895 900 905 910 915 920 925 930 935 940 945 950 955 960 965 970 975 980 985 990 995

Referring to **FIGS. 1-4**, a bolt-keeper toilet flange has a toilet-fastener plate that includes an arcuate plate 1 having a bolt-head bracket that includes a supplemental bolt-head bracket 2 having bracket walls 3 that are supplemental to and superimposed onto material of construction of the toilet-fastener plate and project upwardly from a bolt-head side 4 of the toilet-fastener plate that includes the arcuate plate 1. The arcuate plate 1 has a predetermined arcuate length intermediate a first arcuate end 5 and a second arcuate end 6. The supplemental bolt-head bracket 2 is approximately centered intermediate the first arcuate end 5 and the second arcuate end 6. Intermediate the first arcuate end 5 and the supplemental bolt-head bracket 2 and intermediate the second arcuate end 6 and the supplemental bolt-head bracket 2 are arcuate floor-bolt apertures 7 that preferably have an arcuate length of at least three diameter lengths of floor bolts 8.

The bolt-head bracket can include an integral bolt-head bracket 9 that is shown in **FIGS. 4-8, 12 and 14** in contrast to the supplemental bolt-head bracket 2 which is shown in **FIGS. 1-3, 9-11 and 13**. The bolt-head bracket, whether the supplemental bolt-head bracket 2 or the integral bolt-head bracket 9, has a bolt-shank opening 10 on the bolt-head side 4 of the toilet-fastener plate. This is the same for the arcuate plate 1 that is shown in **FIGS. 1-8**, a connector plate 11 that is shown in **FIGS. 9-12**, a supplemental circumferential plate 12 that is shown in **FIG. 13**, and a base circumferential plate 13 that is shown in **FIG. 14**. The supplemental bolt-head bracket 2 is superimposed on thin supplemental toilet-fastener plates in contrast to the integral bolt-head bracket 9 that preferably is integrated into a wall thickness of the toilet-fastener plates.

The bolt-shank opening **10** is for holding a toilet-bolt shank **14** uprightly from a toilet-bolt head **15** in the bolt-head bracket of either the supplemental bolt-head bracket **2** or the integral bolt-head bracket **9**. This prevents the toilet-bolt shank **14** from rotating and holds it in place where it can be accessed when a toilet bowl that is not shown is placed on it and toilet-bolt nuts **16** are screwed onto the toilet-bolt shanks **14**.

The bolt-head bracket, whether the supplemental bolt-head bracket **2** or the integral bolt-head bracket **9**, includes a bracket entry **17** that is articulated to receive the toilet-bolt head **15** and the toilet-bolt shank **14** radially from a predetermined entry edge of the fastener plate. The entry edge can be an inside edge **18** or an outside edge **19**. **FIGS. 13-14** depict bracket entries **17** on both inside edges **18** and outside edges **19** for illustration purposes only. Most toilet-fastener plates will have the bracket entries **17** on a same predetermined side.

The bolt-head bracket also includes an end wall **20** in the bolt-shank opening **10** for preventing the toilet-bolt shank **14** and the toilet-bolt head **15** from passing through the bolt-head bracket.

The supplemental circumferential plate **12** of **FIG. 13** is intended primarily as a thin, supplemental plate to be used for repairs to hold-toilet bolt shanks **14** and floor bolts **8** in place in relationship to existing but damaged toilet flanges. The base circumferential plate **13** of **FIG. 14** is intended for original installation. Either can have inside and outside peripheries with diameters for particular toilet hardware. Widths of one-to-one-and-one-half inches are suitable for most applications. Either can have floor-bolt apertures **21** that include two series of predetermined pluralities of the floor-bolt apertures **21** that are oppositely disposed circumferentially at

predetermined radii from an axis of the base circumferential plate 13 or the supplemental circumferential plate 12.

5 A new and useful bolt-keeper toilet flange having been described, all such foreseeable modifications, adaptations, substitutions of equivalents, mathematical possibilities of combinations of parts, pluralities of parts, applications and forms thereof as described by the following claims and not precluded by prior art are included in this invention.

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